

## **Feature selection optimization using hybrid relief-f with self-adaptive differential evolution**

### **ABSTRACT**

In various classification areas, the curse of dimensionality becomes a major challenge among the researchers. Thus, feature selection plays an important role in overcoming dimensionality problem. Relief-f is one of the filter methods to rank the most significant features based on their relevance. Although relief-f proved to be a powerful technique in filter strategy, but this method only rank the features based on their significant level. Hence, feature selection is embedded to select the most meaningful features based on their rank. Differential evolution (DE) is one of the evolutionary algorithms that are widely used in various classification domains. Simple and powerful in implementation, we combined relief-f with DE in our proposed feature selection method to solving the optimization problem. In this work, population size and generation size were adaptively determined from the number of features from relief-f. The performance of proposed method is compared with several feature selection techniques in order to prove their superiority using ten datasets obtained from UCI machine learning repository.

**Keyword:** Relief-f; Differential evolution; Evolutionary algorithm; Optimization